Venting Atmospheric and Low-pressure Storage Tanks

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Introduction

This standard has been developed from the accumulated knowledge and experience of qualified engineers of the petroleum, petrochemical, chemical, general bulk liquid storage, and natural gas industries.

Engineering studies of a particular tank can indicate that the appropriate venting capacity for the tank is not the venting capacity estimated in accordance with this standard. The many variables associated with tank-venting requirements make it impractical to set forth definite, simple rules that are applicable to all locations and conditions.

In this standard, where practical, US Customary (USC) units are included in parentheses or in separate tables, for information.

Venting Atmospheric and Low-Pressure Storage Tanks

1 Scope

This standard covers the normal and emergency vapor venting requirements for aboveground liquid petroleum or petroleum product storage tanks and aboveground and underground refrigerated storage tanks designed for operation at pressures from full vacuum through 103.4 kPag (15 psig). Discussed in this standard are:

— causes of overpressure and vacuum;

— determination of venting requirements;

— means of venting;

— selection and installation of venting devices;

— testing and marking of relief devices.

This standard is intended for tanks containing petroleum and petroleum products but it can also be applied to tanks containing other liquids; however, it is necessary to use sound engineering analysis and judgment whenever this standard is applied to other liquids.

This standard does not apply to external floating-roof tanks. It does apply to tanks equipped with an internal floating cover/roof.

2 Normative References

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any addenda) applies.

API Standard 650, *Welded Tanks for Oil Storage*

EN 14015, *Specification for the Design and Manufacture of Site Built, Vertical, Cylindrical, Flat-Bottomed, Above Ground, Welded, Steel Tanks for the Storage of Liquids at Ambient Temperature and Above*

3 Terms and Definitions

For the purposes of this document, the following definitions apply.

3.1
adjusted set pressure
Inlet static pressure at which a pressure-relief valve is adjusted to open on the test stand.

See **set pressure** (3.24).

NOTE 1 Adjusted set pressure is equivalent to set pressure for direct-mounted end-of-line installations.

NOTE 2 The adjusted set pressure includes corrections for service conditions of superimposed back-pressure.